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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Anthony J. KONECNI ET AL.

Serial No. 08/988,686 (TI-22166)

Filed December 11, 1997

For: PLASMA PRE-TREATMENT TO REMOVE RESIDUES FORMED IN A VIA

Art Unit 2823

Examiner M. Wilczewski

Customer No. 23494

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P. O. Box 1450
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5-30-08

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SECOND REPLY BRIEF

A Reply Brief filed June 6, 2006 (see attachment), is not mentioned in the Supplemental Examiner's Answer dated May 12, 2008.

Since the issues in this appeal involve matters of chemistry, it is believed that a chemical Board should handle this appeal and such a Board is requested.

In reply to the above-noted Supplemental Examiner's Answer, it is initially noted that the REMAND TO THE EXAMINER mailed September 27,2005 expressly states at page 4,"...we authorize the examiner to introduce the full English translation officially into the record. If reliance upon the English translation in any way constitutes a new ground of rejection, we authorize the examiner to reopen prosecution of the application. Otherwise,

we authorize the examiner to file a Supplemental Examiner's Answer wherein the full English translation is relied upon. In this way, there is no doubt that appellants have been given an opportunity to respond to position s taken with regard to the full English translation:"

It follows from the above-quoted statement by the Board that, since prosecution was not reopened, thereby affording applicants any and all options available under a reopening of prosecution, the examiner has limited the rejection to the content of the Abstract of the Japanese patent and not to the translation thereof. The translation is therefore not of record unless the examiner reopens prosecution with all benefits accruing to appellants from such action.

As stated in the specification at page 3, line 6ff, "[p]revious cleaning techniques associated with selective coupling processes have involved chlorine or bromine chemistries that are complex, leave behind corrosive by-products and other residue, and use highly corrosive gases that require specialized containment equipment, making such techniques unsuitable for many applications, In addition, these techniques often require further processing and equipment to remove residual material from surrounding non-contact regions after conductive material is coupled to conductive surfaces of the contact regions."

The present invention overcomes the above noted problems by, as stated in claim 21, providing a halogen-free gas comprised of hydrogen incorporated within a plasma into the opening in the insulating layer and onto the exposed portion of the first conductive layer to increase the reactive surface of any residual material on the exposed portion and at least partially remove the residual material. This is set forth in SUMMARY OF THE INVENTION and especially in the paragraph bridging pages 4 and 5. The present invention

provides *both a physical and a chemical cleaning process*.by utilizing the plasma incorporation of halogen-free hydrogen.

With reference to the Japanese patent of Masanori, the Abstract provided clearly states that the fluorine and oxygen in a denatured layer are converted into hydrofluoric acid and water both by the physical action of argon plasma and by chemical reaction of hydrogen. So it can only be presumed from the Abstract (though not specifically stated) that the argon-hydrogen mixture in a plasma is reacted with fluorine and oxygen to provide hydrofluoric acid. Hydrofluoric acid is a halogen acid, fluorine being a halogen and the most corrosive halogen. It follows that the Abstract of the Japanese patent teaches away from that which is claimed and teaches what is stated at page 3, line 9ff of the subject specification to cause the problems averted by the present invention.

With reference to the translation of the Japanese patent, which officially is still not of record, reference is invited to page 4, fourth paragraph where it is stated "[n]ext, when dry etching cleaning is applied to lower aluminum wiring layer 3 exposed by the via-hole parts using a mixed gas comprising an argon gas as a rare gas and a hydrogen gas, sputtering etching (physical method) with the plasma of the argon gas is realized, like in the past and HF and water are created as the fluorine and the oxygen contained in the hydrogen gas and degenerated layer 6 react with each other (chemical method)." It follows that, though the Japanese reference discusses use of argon and hydrogen, it then combines these materials with "fluorine and oxygen contained in the hydrogen gas" to form the HF. It follows that the Japanese translation also fails to teach or suggest "providing a halogen-free gas comprised of hydrogen incorporated within a plasma into said opening in said insulating layer and onto the exposed portion of said first conductive layer to increase the reactive

surface of any residual material on said exposed portion and at least partially remove said residual material" as required by claim 21.

In view of the above, reversal of the final rejection is still requested on the basis of the arguments previously presented or remand to the Examiner with reopening of prosecution should the Board consider to translation to be more relevant than the Abstract.

Respectfully submitted,

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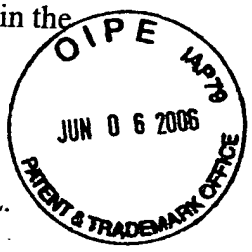

REPLY BRIEF (3)

Inventor(s):ANTHONY J. KONECNI ET AL.
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